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May 23, 2019

Mr. James Saric
Remedial Project Manager
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard (SR-6J)
Chicago, Illinois 60604-3511

Re: Natural Resource Trustees' for the Kalamazoo River Comments for Operational Unit 5 (OU5) Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site, Area 3 Draft Feasibility Study, Revision 1 (FS), dated July 13, 2018, Prepared by Amec Foster Wheeler Environment and Infrastructure, Inc.

Dear Mr. Saric:

The Natural Resource Trustees for the Kalamazoo River are writing to provide comments on the Area 3 Draft Feasibility Study, Revision 1 (FS) in furtherance of their interest in restoration of, or compensation for, injury or loss of natural resources, resulting from the releases of hazardous substances in the Kalamazoo River. The Trustees for the Kalamazoo River include the Directors of the Michigan Department of Environment, Great Lakes, and Energy (EGLE), the Michigan Department of Natural Resources (MDNR), the Michigan Attorney General, the U.S. Secretary of the Interior as represented by the Regional Director of the U.S. Fish and Wildlife Service (USFWS), and the U.S. Secretary of Commerce as represented by the National Oceanic and Atmospheric Administration (NOAA). The Trustees appreciate the opportunity to review and provide comments on the FS and seek to apprise you of concerns that the Trustees believe are important in addressing restoration of, or compensation for, natural resource injury and loss.

The Natural Resource Trustees have reviewed the comments provided by EGLE to the United States Environmental Protection Agency (EPA) on May 2, 2019, on the FS, and wish to convey support for and additional information for some of these comments, as they relate to the specific interests of the Trustees. That the Trustees are not addressing each comment raised by EGLE does not indicate

disagreement, but instead that the Trustees did not view it specifically relevant to the natural resource damage assessment and restoration process.

For ease of reference, the Trustees have provided the text of the original EGLE comment and then the Trustees' additional comments below the supported comment.

Comments

EGLE Bullet #1, p. 1: *"In addition to polychlorinated biphenyl (PCBs), dioxins and furans (D/F) have been identified as a constituent of concern (COC) in Area 3. Therefore, when defining Site COC, it is more accurate to state: COCs are PCBs and D/F and dioxin-like congener (DLC) measured as toxic equivalency (TEQ)."*

Trustees' Additional Comment: The Trustees concur that the COCs for Area 3 now include both PCBs and dioxin toxic equivalents (TEQs), where TEQs are derived from the combined toxicities of polychlorinated dibenzo-*p*-dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs), and dioxin-like PCB congeners (DLCs).

EGLE Bullet #3, pp. 1-2: *"EGLE does not support the comparative estimation of fish tissue recovery timeframes for the Alternatives presented. For instance, the upper, middle, and lower bounds for fish tissue recovery shown on Figures 4-1a through 4-1c for Alternative 1 (No Action) and 4-2a through 4-2c for Alternative 4 (excavation of over 75,000 cubic yards of material) are almost identical. Similarly, the upper, middle, and lower bounds for fish tissue recovery timeframes for Alternative 5 (excavation of over 500,000 cubic yards of material) shown on Figures 4-3a through 4-3c are nearly identical to those for Alternative 4. EGLE agrees the implementation time and natural resource recovery for excavation alternatives (e.g. Alternative 4) would be longer than Alternative 1 but believes the net benefit of various excavation scenarios has not adequately been captured in these estimates."*

Trustees' Additional Comment: The Trustees are critically interested in having estimates of fish recovery timeframes that help distinguish among alternatives and support improvements in these estimations for the various excavation scenarios.

EGLE Bullet #4, p. 2: *"The step-down in fish tissue concentrations in Figures 4-1a and 4-2a are based, in part, on results from the Bryan[t] Mill Pond (BMP) time critical removal action (TCRA). Unlike the Area 3 TCRA, the operators at the BMP TCRA excavated material based on visual indicators, that is, the paper residuals (gray clays) were completely removed and operators were given flexibility to dig*

shallower or deeper based on the presence of gray clays. The benefit of the Area 3 TCRA will only be fully realized and quantified through the collection of samples from a variety of media over a prolonged period and the benefit (step-down) may be greater or lesser than what is projected in the FS models due to the difference in removal strategies and objectives in the BMP and Area 3 TCRAs."

Trustees' Additional Comment: The Trustees agree with EGLE that the excavation approach used in the original Bryant Mill Pond TCRA are not likely to be predictive of other removals conducted with different approaches. By targeting all visible gray clay rather than digging to pre-determined depths, operators in the Bryant Mill Pond TCRA likely removed a greater percentage of PCB-contaminated material in their removals than would be likely in excavations that only extend to pre-determined dimensions.

EGLE Bullet # 6, pp. 2-3: *"The FS should provide uncertainty estimates for various remedial action levels (RALs). Preliminary remedial goals (PRGs) and associated RALs have been derived for portions of the Kalamazoo River Superfund Site through the use of what-if scenarios which provide forecasts of post remedial surface weighted average concentration (SWAC), which correspond to a selected RAL. These SWAC forecasts are compared with the PRGs and generally the highest RAL corresponding to a SWAC that is less than or equal to the PRG is selected.*

The first evaluations conducted along these lines at the Kalamazoo and other sites were based on maps of concentrations derived from sample data, but the uncertainty in those maps was not factored into the derivation of RALs. Subsequent studies of this process revealed that targeting errors in the mapping can substantively bias the calculations toward higher RALs and correspondingly smaller remedial footprints than are necessary to achieve the actual desired performance. Because of this bias, statistical methods based on geostatistics, which account for these contaminant targeting errors have been successfully applied to correct for this systematic bias in the previously proposed SWAC forecasting methodology.

It is expected that uncertainty in mapped contaminant distributions will be factored into calculations intended to derive a correspondence between SWAC and RAL, or equivalent correspondence between percent home ranges exceeding PRGs and RAL[s] at Area 3 as well as in other Areas of OU5."

Trustees' Additional Comment: The Trustees support using uncertainty estimates in evaluating and applying RALs and request that the uncertainty estimates be provided so that we may more effectively evaluate the percent of animal home ranges exceeding PRGs and RALs when quantifying injury.

EGLE General Comment #10: "Alternatives 2, 3 and 4 propose discontinuing the LTM program (fish, sediment, and surface water, and fish advisories) once fish tissue goals are met. EGLE believes the LTM should not be discontinued until multiple, successive rounds (MDEQ recommends three) of fish tissue data indicate that fish tissue COC goals have been met. Revise the document accordingly. EGLE notes that the fish consumption advisory is managed by the Department of Health and Human Services using data tissue samples collected by EGLE."

Trustees' Additional Comment: The Trustees concur that it is important that LTM should not be discontinued until multiple, successive rounds of fish tissue data indicate COC goals have been met. Trend analyses require multiple time points to achieve statistical confidence and fish tissue data sets like these are known to exhibit year-to-year variability.

EGLE General Comment #11: "The aerials from 1986 and 1999 also show a narrowing of the channel in the upstream subarea relative to the other historic aerials indicating that the upstream subarea may have been influenced by historic dam operations. Revise discussions regarding long-term channel stability for the upstream subarea accordingly[.]"

Trustees' Additional Comment: Successful river channel restoration with long-term channel stability requires careful consideration of appropriate regional reference curves to relate channel flow, width, depth, and sinuosity. Without proper design, the river will continue to alter its channel and long-term monitoring and maintenance will be required to prevent harmful levels of bank and/or river bottom erosion.

EGLE Comment Section: ES Page #: ES-6 Lines #: Specific Comment #1: *"It would be beneficial to compare concentrations of sediment samples, and SWACs, to the same concentration thresholds throughout the section. Currently, comparisons are made to 0.33, 1, 5, or 10 mg/kg, depending upon paragraph. Consistent with upstream Areas, and to protect aquatic receptors and anglers, EGLE anticipates the sediment remediation goal for Area 3 will be 0.33 mg/kg."*

Trustees' Additional Comment: In addition to EGLE's evaluation that a protective sediment remediation goal for Area 3 will likely be 0.33 mg/kg, achieving this concentration rather than 1, 5, or 10 mg/kg will be more likely to eliminate injuries to natural resources over time in Area 3, including achieving fish tissue

concentrations that do not trigger fish consumption advisories. In the Trustees' Stage I Assessment Report (MDEQ et al. 2005), for example, the Trustees identified several potential injury thresholds for concentrations of PCBs in sediment, including 0.4 mg/kg dry weight (dw) as a concentration above which adverse effects are frequently observed for benthic invertebrates and 0.6 mg/kg dw as an injury threshold for mink.

EGLE Comment Section: ES Page #: ES-8 Lines #: 19-22 Specific Comment #2: *"High-sensitivity birds may not be present at the Site due, in part, to high concentrations of contaminants (PCBs, dioxins and furans) in soils, sediments, and biota. Remove this statement or revise the text to indicate that high-sensitivity birds may not be present, in part, due to the presence of contaminants from historic paper mill operations. Please revise the document or remove the statement."*

Trustees' Additional Comment: The Trustees agree that this language should be revised or removed for the reasons stated by EGLE and because it is misleading. Not all possible species have been tested for sensitivity to dioxin-like compounds and dioxin-like activity is not the only relevant mechanism of action for PCBs in birds that could affect relative sensitivity and risk. The existing text mentions that high sensitivity vermivorous birds have not been observed on site, but does not make clear that high-sensitivity insectivorous birds have been observed at the Site. The ruby-throated hummingbird (*Archilochus colubris*) and gray catbird (*Dumetella carolinensis*) are species that are native high sensitivity species (Type 1B and 1C, respectively in Farmahin et al. 2013) known to breed in Kalamazoo and Allegan counties and which have suitable habitat on the Site. The gray catbird has been observed on-site and is insectivorous, especially during the breeding season, and also eats spiders (which are themselves insectivorous and biomagnify PCBs, e.g. Walters et al. 2009 and Kraus et al. 2016). The ruby-throated hummingbird also consumes insects and spiders during the breeding season.

The Trustees thank you again for the opportunity to provide comments on the FS. If you wish to discuss any of the comments, please do not hesitate to contact us.

Sincerely,

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LF: Kalamazoo River –NRDA DEQT; AG# 2000-054553-A/Letter – Saric 2019-05-23

Literature Cited

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